SHARP Service Manual

The model GS-5530S is almost similar to the model GS-5530L. For additional service information, refer to the manual of the model GS-5530L.

MODEL GS-5530S

SPECIFICATIONS

AM SECTION	
Frequency Cover Range	MW 520 ~ 1620kHz SW 6 ~ 18MHz
Intermediate Frequency	455kHz
Maximum Sensitivity	MW 100μV/m nominal SW 18μV/m IEC 300 ohm nominal
Image Rejection	MW 40dB minimum at 1400kHz SW 10dB minimum at 16MHz
IF Rejection	MW 30dB minimum at 600kHz SW 60dB minimum at 7MHz
Harmonic Distortion	Less than 3%
FM SECTION	
Frequency Cover Range	87.5 ~ 107.5MHz
Intermediate Frequency	10.7MHz
IHF Sensitivity	3μV nominal IHFM 500mW
Image Rejection	Minimum 45dB
IF Rejection	Minimum 70dB
Harmonic Distortion	1%
Frequency Response	20Hz ~ 15kHz
S/N Ratio	60dB
FM Stereo Separation	30dB nominal at 1000Hz
ANTENNA	
AM	Ferrite Bar Antenna
FM	300 ohm Balance Antenna
AUDIO SECTION	
Music power	36W (18W + 18W) (at dist. 5%)
Harmonic Distortion	0.5%
Power Band Width	30Hz ~ 30kHz (dist 1% const. –3dB)
Frequency Response	50Hz ~ 20kHz (Tone center)
Channel Separation	45 nominal
Hum and Noise	Less than 10mV
Tape Recording Output	30mV impedance 100k ohm
Tone Control Action	Bass Boost +10dB nominal Cut – 10dB nominal Treble Boost +10dB nominal Cut –10dB nominal

SPEAKER ENCLOSURE	
Speaker	8" woofer and 2-1/2" Tweeter per channel
Power Handling Capacity	20W (M.P.O.)
Dimensions	10"(W) x 15"(H) x 8-5/8"(D) each
Impedance	8 ohm
POWER EQUIPMENT, ETC.	
AC Power Requirements	110/220/240V 50Hz
AC Power Comsumption	44W
Dimensions	19-5/8"(W) x 9"(H) x 15-1/8"(D)
TERMINALS and JACKS	
Tape Record DIN Socket	
Speaker Output DIN Socket	
Headphone Jack	
AM External Antenna DIN Socket	
FM Antenna DIN Socket	
RECORD PLAYER	
Type	2-Speed Stereo Player
Power Source	100V 50Hz
Motor	4-Pole Inudction Motor
Revolution	33 1/3, 45 rpm.
Turntable	11-13/16" Steel Plate with Rubber Sheet
Arm	Pipe Tone Arm
Cartridge	Stereo Ceramic Cartridge
Stylus	Diamond Stylus
Stylus Pressure	5 grams
Power Consumption	9.5 watts
Additional Devices	Arm Lifter Auto-return system Cutout system Automatic Idler-off Device

SHARP CORPORATION OSAKA, JAPAN

SEMICONDUCTOR COMPLEMENT

Transistors

Q1	3SK-30	Ⓐ or Ⓑ	FM RF Amplifier (FET)
Q2	2SC535	Ⓑ	FM Converter
Q101	2SC535	Ⓑ	1st FM IF Amplifier
Q102	2SC460	Ⓒ	2nd FM IF Amplifier 1st AM IF Amplifier
Q103	2SC460	Ⓑ	3rd FM IF Amplifier 2nd AM IF Amplifier
Q104	2SC460	Ⓒ	4th FM IF Amplifier
Q105	2SC460	Ⓑ	AM Mixer
Q106	2SC458	Ⓒ	Tuning Meter
Q201	2SC454	Ⓑ	AM Local Oscillator
Q301	2SC458	Ⓑ	FM MPX Composite Amplifier
Q302	2SC458	Ⓑ	FM MPX 19kHz Amplifier
Q303	2SC458	Ⓑ	FM MPX 38kHz Amplifier
Q304	2SC458	Ⓒ	FM MPX Indicator
Q305	2SC458	Ⓒ	FM MPX Indicator
Q401,Q402	2SC458	(LG) Ⓑ	Tone Amplifier
Q501,Q502	2SC458	(LG) Ⓒ	1st Pre-Amplifier
Q503,Q504	2SC458	(LG) Ⓒ	2nd Pre-Amplifier
Q505,Q506	2SC458	(LG) Ⓑ	Audio Amplifier
Q507,Q508	2SC984	Ⓑ	Driver Amplifier
Q509,Q510	2SC1213A	Ⓑ	Complementary Driver Amplifier
Q511,Q512	2SA673A	Ⓑ	Complementary Driver Amplifier
Q701,Q702, Q703,Q704	2SC1060	Ⓑ	Power Amplifier

Diodes

D1	1S351R	FM AFC
D101	1N60	FM Limitter
D102,D103	1N60	FM AVC
D104,D105	1N60	FM Rectifier
D106,D107	1N60	FM Descriminator
D108	1N60	AM AVC
D109	1N60	AM Detector
D110,D111	1N60	Tuning Meter
D301,D302	1N34A	FM MPX Frequency Doubler
D303,D304, D305,D306	1N34A	FM MPX Detector
D307,D308	1S990	Voltage Stabilizer
D501,D502, D503,D504	HV-23 (BL)	AF Thermal Control
D601,D604	1S1941	Rectifier
D602,D603	SI-RECT-39	Rectifier

Q1 used for FM RF amplifier is a field-effect transistor with N-type base.
Its specification is as follows.
Maximum Ratings (ambient temperature 25°C)

Characteristics	Symbol	Rating	UNIT
Gate to Source Voltage	Vg1ss	−15	V
	Vg2ss	−15	V
Gate Current	Ig1	10	nA
	Ig2	10	nA
Channel Dissipation	Pch	200	mW
Channel Temperature	Tch	150	°C
Storage Temperature	Tstg	−65 ~ +150	°C

Electrical Characteristics (ambient temperature 25°C, grounded – Source)

Characteristics	Symbol	Test Condition	Min.	Standard	Max.	Unit
Gate to Source Breakdown Voltage	V(BR)gss	Ig=−100μA, Vds=0, Vg1g2=0	−15	–	–	V
Gate Reverse Current	Igss	Vgs=−10V, Vds=0, Vg1g2=0	–	–	−100	μA
Zero Gate Voltage Drain Current	Idss	Vds=10V, Vg1s=Vg2s=0	3	8	20	mA
Gate to Source Cutoff Voltage	Vg1s(off)	Vds=10V,Id=20μA, Vg2s=0	–	–	−6	V
Forward Transfer Admittance	|yfs|	Vds=10V, Vg1s=Vg2s=0 f=1 KHz	4	7.5	–	m℧
Input Capacitance	Ciss	Vds=10V, Vg1s=Vg2s=0 f=1 MHz	–	4.5	–	PF
Reverce Transfer Capacitance	Crss	Vds=10V, Vg1s=Vg2s=0 f=100 MHz	–	0.4	0.6	PF
Power Gain	PG	Vdd=10V, Vg2s=0, f=100 MHz	13	17	–	dB
Noise Figure	NF	Vdd=10V, Vg2s=0, f=100 MHz	–	2.2	3.5	dB

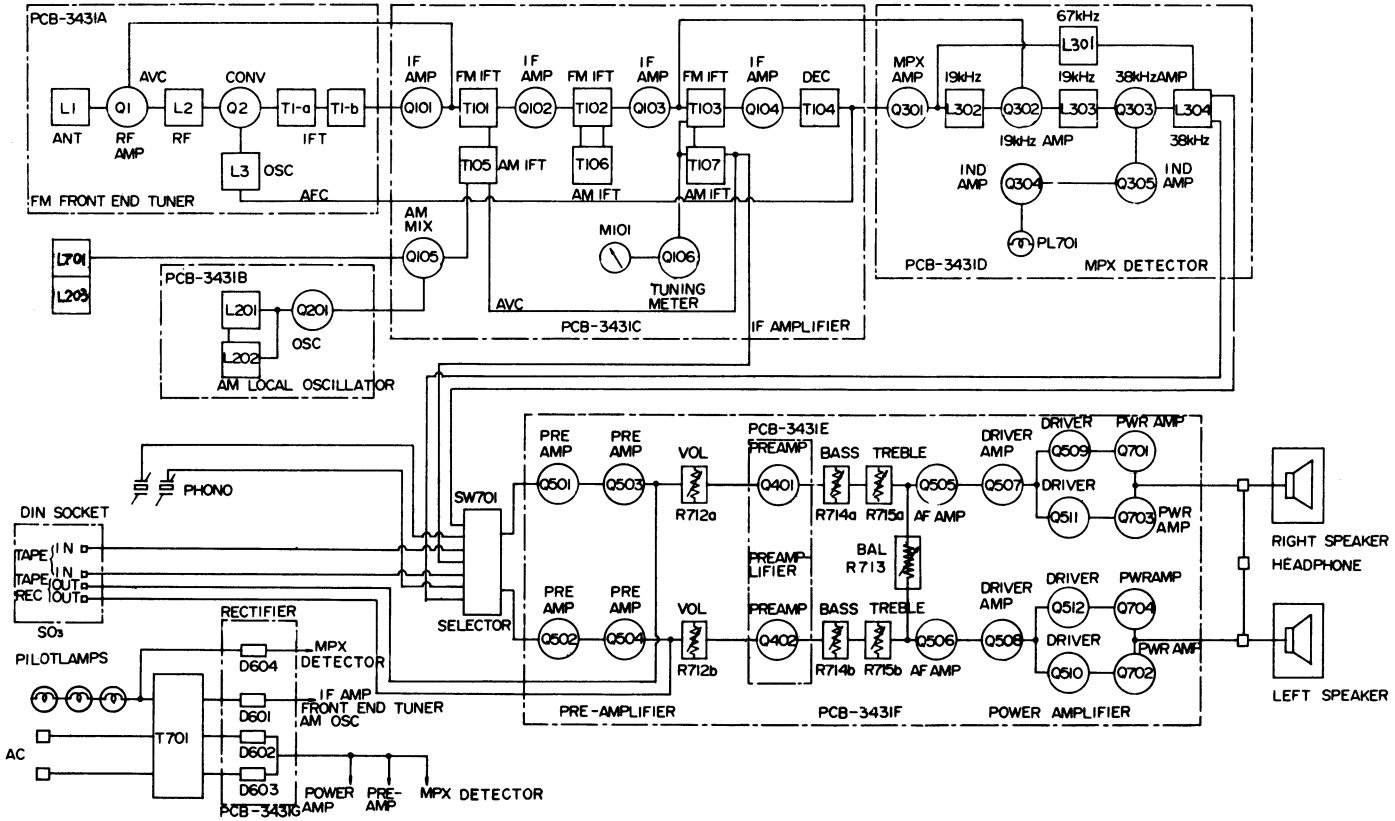


Figure 1 BLOCK DIAGRAM

CIRCUIT DESCRIPTION

GS-5530S is a tuner-amplifier with MW/SW/FM/FM MPX
The circuit construction is shown in the Block Diagram (Figure 1)

FM FRONT–END SECTION

The signal that is fed from the antenna to the front-end passes through the FM antenna coil (L1) and flows into the gate of the FM RF amplifier(Q1). This FM RF amplifier (Q1) is a high sensitive FET(Field Effect Transistor). The FM converter(Q2) converts the FM RF signal amplified at the FM RF amplifier (Q1) to the FM IF signal. The FM IF signal is transmitted at the first FM IF transformer (T1) and is sent to the next FM IF stages.

This circuit is the plus-voltage grounded type, each voltage shows its valve with respect to the B line. The diode (D1) operates as AFC diode.

AM LOCAL OSCILLATOR SECTION

This oscillator circuit is the emitter-tuning type. The oscillation frequency that is gained by the oscillator (Q201) is transmitted into the emitter of the mixer (Q105).

This circuit is the plus-voltage grounded type, each voltage shows its value with respect to the B line.

AM MIXER SECTION (MW/SW)

The AM signal is resonated in the primary winding of the antenna coil (L701/L203) and the tuning circuit of the variable capacitor, and then its signals is stepped-down in the secondary winding of the antenna coil (L701/L203). The AM converter (Q105) converts the stepped-down AM signal to the AM IF and sends it to the next AM-IF stages.

FM/AM IF AMPLIFIER SECTION

The FM IF circuit incorporates 4 IF amplifiers (Q101, Q102, Q103, Q104) and the AM IF circuit incorporates 2 IF amplifiers (Q102, Q103).

On FM signal reception, the IF signal is amplified at the 1st FM IF amplifier (Q101). The signal amplified at the 2nd FM IF amplifier (Q102), the 3rd FM IF amplifier (Q103) and the 4th FM IF amplifier (Q104) is detected by the FM discriminator which consists of the transformer (T104) and the diodes (D106,D107), and its signal is converted to the audio frequency signal or the composite signal (on stereo signal reception). When receiving the AM signals, the IF signal amplified at the 1st AM IF amplifier (Q102) and the 2nd AM IF amplifier (Q103) and taken out from the secondary winding of transformer (T107), is detected at the diode (D109) and then converted to the audio frequency signal.

The diode (D101) on the FM IF circuit operates as the limiter. The diodes (D102, D103) feed back the DC voltage to the FM RF Amplifier (Q1) gate 1 and operate as AVC.

In AM circuit the DC voltage which is obtained from both ends of capacitor (C141) in proportion to input signal, feed back to the bias circuit of the Q102 through resistor (R133) to get the AVC effect. The diode (D108) controls the large input signals as the AVC diode. The diodes (D104, D105) operate on FM stereo reception. The DC voltage which is obtained by them, sends to the circuit of the Q302 in the MPX discriminator and controls the FM stereo indicator.

THE INSTRUCTION OF FREQUENCY ADJUSTMENT

In order to comply with FTZ rule Nr. 358 S757, please fix the low end dial frequency on FM (UKW) band, by adjusting L3 on the tuner section shown in figure 2. Adjustment is made by rotating ferrite core of this inductor to get a peak reception of a generated standard or a broadcasting signal at the frequency of 87.5 MHz.

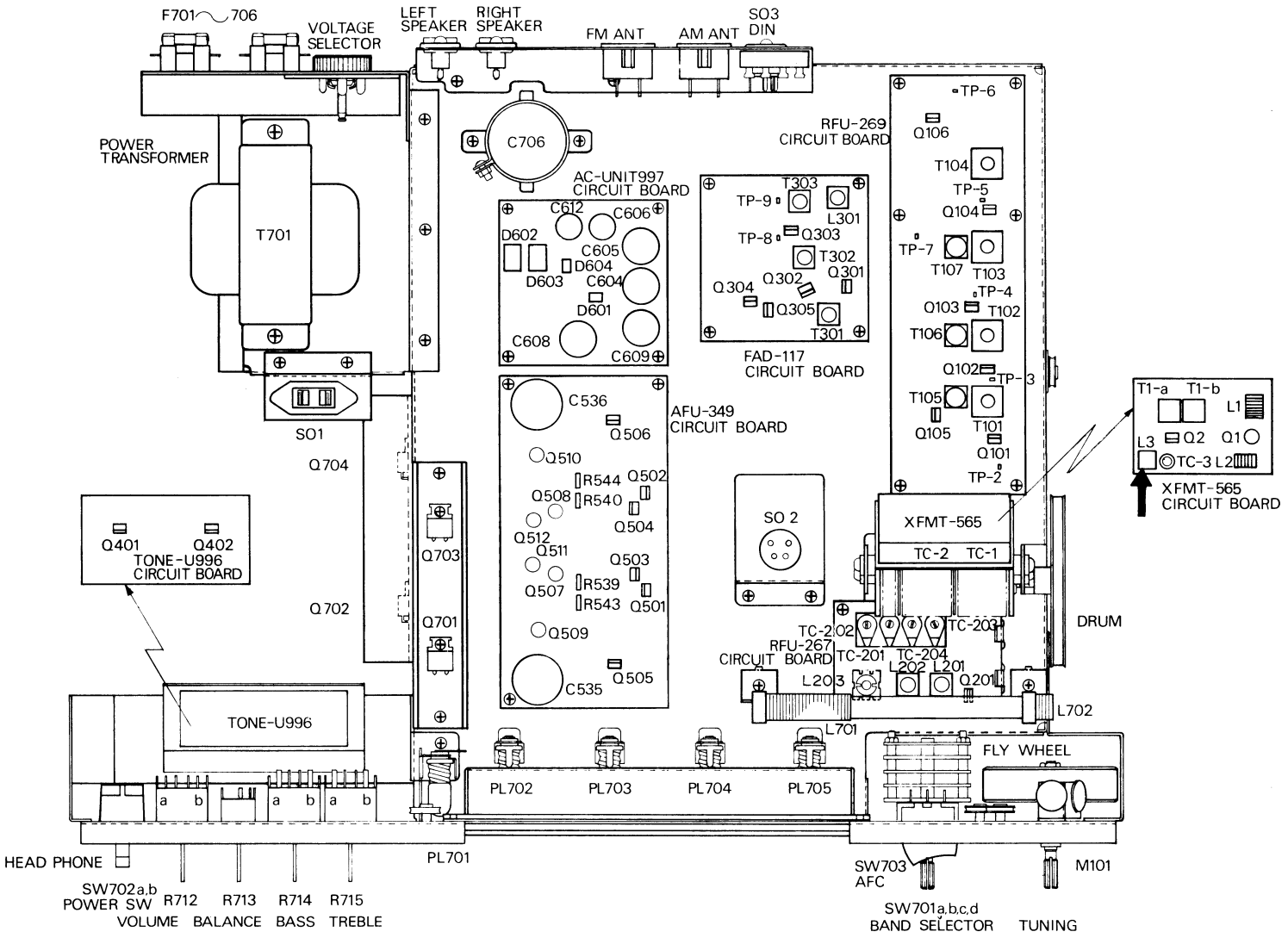


Figure 2 CHASSIS LAYOUT

ALIGNMENT INSTRUCTIONS

Alignment is an exacting procedure and should be undertaken only when necessary. If alignment of AM and FM is required, either section may be done first. The FM stereo section, however, should be done only when the FM monaural section is sure to be properly adjusted.

Important:

The AM and FM section except MPX discriminator is of B + grounded type while the other section are of B – grounded type.

REQUIRED EQUIPMENTS

1. Signal generator with a frequency range of 510kHz to 20MHz.: AM
2. Signal generator with a frequency range of 87MHz to 110MHz.: FM
3. Signal generator with a frequency range of 10.7MHz± 0.5MHz: FM
4. Vacuum tube voltmeter (AC-VTVM)
5. Sweep signal generator with a sweep range of at least 500kHz and center frequency of 10.7MHz with at least a 10.7MHz marker. (Ext. marker may be used)
6. Oscilloscope with a wide range amplifier of approximate 100kHz.
7. Test loop, a coil of any size wire, one turn or more.
8. FM stereo signal generator.
9. Audio signal generator with a frequency range of 20Hz to 50kHz.

Notes: Allow the set at least five minutes to warm up before attempting alignment. During alignment keep the signal generator output at the lowest level that will maintain a usable output from the set, except for FM stereo signal generator.

Take much care, lest the grounding of FM Sweep signal generator input should make multipaths which made FM IF alignment incorrect. To avoid this the grounding lead may be connected through 0.01-0.04 MFD capacitor to the tuner chassis when sweep generator or signal generator is connected to the tuner section.

Ground connection of signal generator ..... chassis ground
Generator modulatin (AM) 30%, 400Hz
Generator modulation (FM) ..... 75kHz, 1000Hz Mod.
Generator modulation (FM stereo) ..... Ch.L. or Ch.R.
33.75kHz 1000Hz Mod.

ALIGNMENT PROCEDURE
AM ALIGNMENT

Signal Generator		Dial Pointer Setting	Selector Setting	Meter Connection	Adjustment	Remarks
Connection	Frequency					
Radiated Signal as small as possible	455kHz	High end of Dial	MW	Across Output Load	T107 T106 T105	Volume Control max Get peak output. Repeat 2 or 3 times.
Radiated Signal as small as possible	513kHz (Modulated)	Low end of Dial	MW	Across Output Load	L201	Same as above.
Radiated Signal as small as possible	1650kHz (Modulated)	High end of Dial	MW	Across Output Load	TC-203	Same as above
Radiated Signal as small as possible	1400kHz (Modulated)	1400kHz	MW	Across Output Load	TC-201	Same as above
Radiated Signal as small as possible	600kHz (Modulated)	600kHz	MW	Across Output Load	L701	Same as above
Radiated Signal as small as possible	5.7MHz (Modulated)	Low end of Dial	SW	Across Output Load	L202	Same as above
Radiated Signal as small as possible	18.5MHz (Modulated)	High end of Dial	SW	Across Output Load	TC-204	Same as above
Radiated Signal as small as possible	16MHz (Modulated)	16MHz	SW	Across Output Load	TC-202	Same as above
Radiated signal as small as possible	7MHz (Modulated)	7MHz	SW	Across Output Load	L203	Same as above

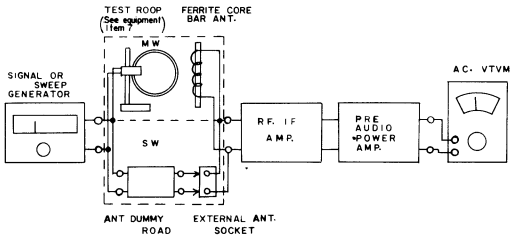
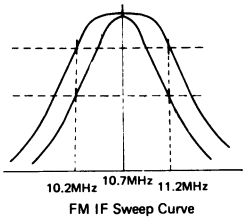


Figure 3 AM ALIGNMENT

FM IF ALIGNMENT

Signal Generator		Selector Setting	Scope Connection	Condition	Adjustment	Remarks
Connection	Frequency					
Through .02 mfd. to TP-4	10.7 MHz ±1500 KHz	FM	TP-5	Short the primary Winding of T104 and the secondary Winging of T102 with .02 mfd.	T103	Maximum amplitude keeping 10.7 MHz marker centered
Through .02 mfd to TP-3	10.7 MHz ±500 KHz	FM	TP-5	Short the primary Winding of T104 and the secondary Winding of T101 with .02 mfd.	T102	Same as above
Through .o2 mfd to TP-2	10.7 MHz ±500 KHz	FM	TP-5	Short the primary Winding of T104 with .02 mfd and detume T1a, b.	T101	Same as above
Through 10 mfd to TP-1	10.7 MHz ±500 KHz	FM	TP-5	Short the primary Winding of T104 with .02 mfd.	T1a and T1b	Same as above
Through 10 mfd to TP-1	10.7 MHz ±500 KHz	FM	TP-6	–	Adjustment T104	Adjust for maximum amplitude and symmetry of "S" curve

Note: Dial pointer setting is high end of dial.
Refer to Fig. 4 about the response curve.



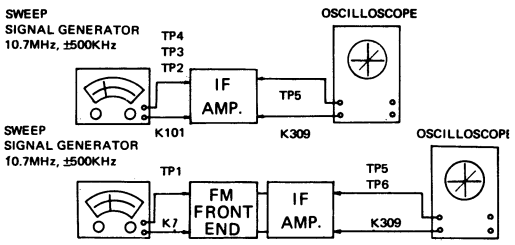


Figure 4 FM IF ALIGNMENT

FM RF ALIGNMENT

Signal Generator		Dial Pointer Setting	Selector Setting	Meter Connection	Adjustment	Remarks
Connection	Frequency					
FM-ANT. Terminal (through 300 ohm matching pad.)	87.3MHz Modulated	Low end of Dial	FM	Across Output Load	L3	Volume Control Max. Get peak output point. Repeat 2 or 3 times
FM-ANT. Terminal	108MHz Modulated	High end of Dial	FM	Across Output Load	TC-3	Same as above
FM-ANT. Terminal	90 MHz Modulated	90 MHz	FM	Across Output Load	Secondary winding of L1 and L2	Same as above
FM-ANT. Terminal	106 MHz Modulated	106 MHz	FM	Across Output Load	TC-1 TC-2	Same as above

Note: Before proceeding with FM RF alignment set the AFC switch to OFF position.

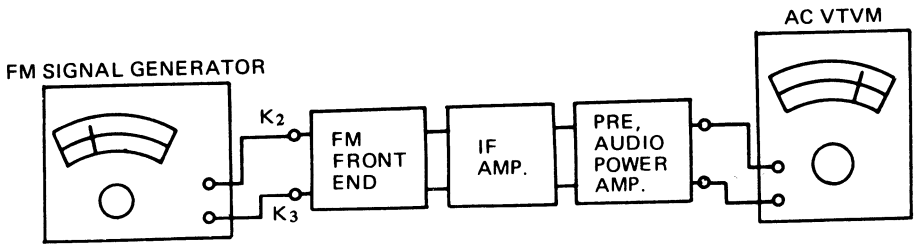


Figure 5 FM RF ALIGNMENT

FM STEREO ALIGNMENT

Stereo Signal Generator		Tunning Frequency	Selector Setting	Scope or V.T.V.M. Connection	Adjustment	Remarks
Connection	Frequency					
K-301	67 kHz 0.3 V	—	FM STEREO	TP-9	L301	Get the minimum point.
FM-ANT	19 kHz Mod. level as small as	98 MHz	FM STEREO	TP-8 Sensitivity Max.	T301.T302 Respectively	Get the maximum point. Repeat 2 or 3 times
FM-ANT	19 kHz 10% Mod.	98 MHz	FM STEREO	TP-9	T303	Get the maximum point.
FM-ANT	1000 Hz Ch. L only 60 dB	98 MHz	FM STEREO	Across Ch. L Output Load	T302 (Readjust)	Get the maximum point. Rotate 1/16 to 1/8 turn counter -clockwise.
FM-ANT	1000 Hz Ch. L only 60 dB	98 MHz	FM STEREO	Across Ch. R Output Load	R301	Get the minimum point

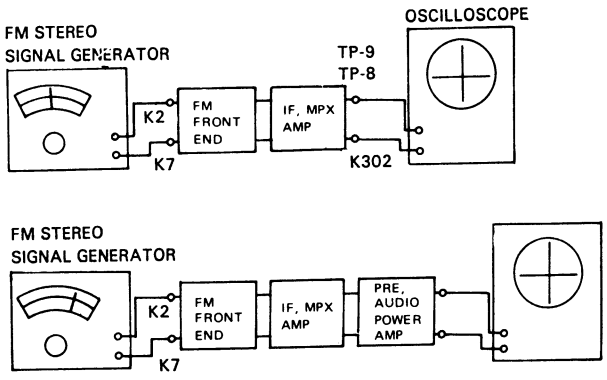


Figure 6 FM STEREO ALIGNMENT

ADJUSTMENT OF BIAS CURRENT OF POWER TRANSISTORS

1. Adjust variable resistor R 543 (R 544) for minimum resistance value.
2. Adjust variable resistor R 539 (R 540) so that the voltage between K 504 (K 509) and the ground is one half the value (19V) of the voltage (38V) between the ground and K 524 (K 513).
3. Readjust R 543 (R 544) so that the voltage between the ground and K 505 (K 508) is 8mV.

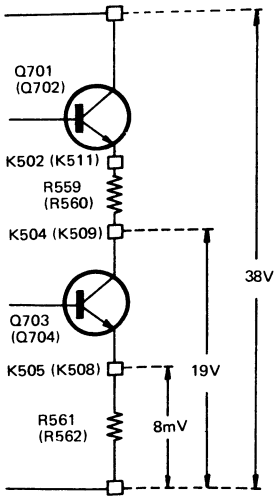


Figure 7 ADJUSTMENT OF BIAS CURRENT OF POWER TRANSISTORS

FUSE REPLACEMENT

Before replacing fuses be sure to read carefully the following instructions. Never attempt to use other wires or fuses of improper capacity. Before replacing fuses, be sure to remove the AC line cord plug from the AC outlet.

1. RECORD PLAYER FUSE: F-701
   The capacity of the record player fuse is 300mA. If the record player does not function while the amplifier is operating, this fuse has been blow. After checking for a short on the wirings of the player, replace the fuse in the same way.
2. AC LINE FUSE: F-702
   The AC line fuse is provided at the back of the amplifier. If the amplifier fails to function due to a blown fuse, remove the AC line fuse from the fuse holder and replace it with a new one. In this case use a 700mA cartridge fuse for 110V AC, or a 500mA one for 220, 240V AC.
3. PILOT LAMP FUSE: F-703
   The capacity of the pilot lamp fuse is 1.5 A. If the pilot lamps do not light while the amplifier is operating, this fuse has been blown. After checking for a short on the wirings of the pilot lamps and the rectifier circuit, replace the fuse in the same way.
4. TUNER AMPLIFIER FUSE: F-704
   The capacity of the tuner amplifier fuse is 150 mA. If the tuner amplifier does not function while the audio amplifier is operating this fuse has been blown. After checking for a short on the wirings of the tuner amplifier replace the fuse in the same way.
5. POWER AMPLIFIER FUSE: F-705, F-706
   These fuses protect the power transistors from the destruction in the case of shorting on the speaker treminals or the wirings of the power amplifier. The capacity of the power amplifier fuse is 1A. After checking for a short replace the fuse in the same way.

IMPORTANT: To avoid electric shock be sure to disconnect the AC power cord from the AC outlet before removing cabinet case and replacing fuses.

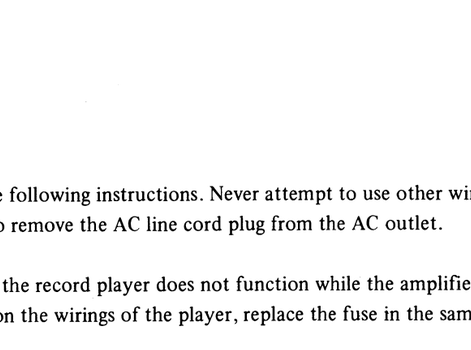


Figure 8 FUSE REPLACEMENT

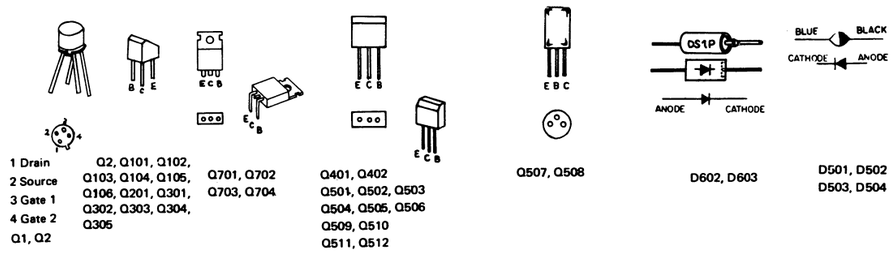


Figure 9 TRANSISTOR BASING

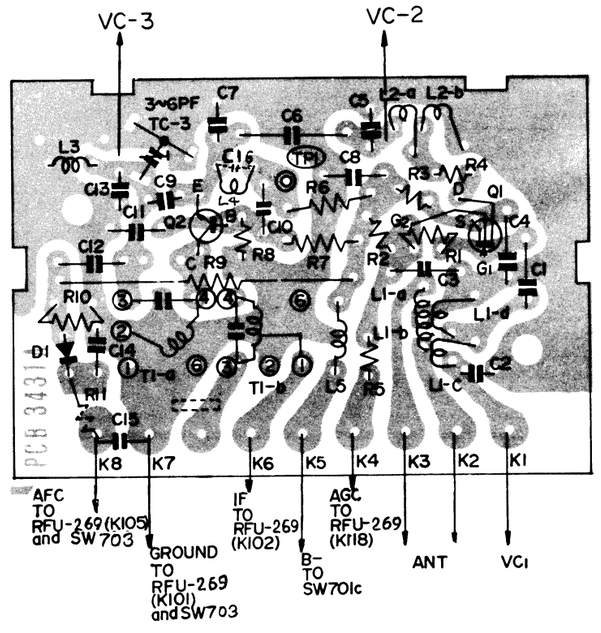


Figure 10 WIRING SIDE OF FM TUNER

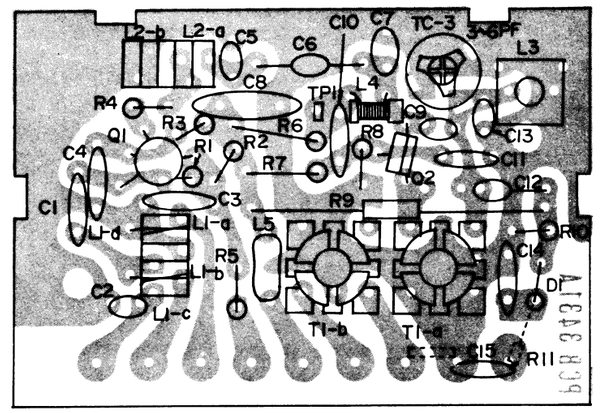


Figure 11 COMPONENT SIDE OF FM TUNER

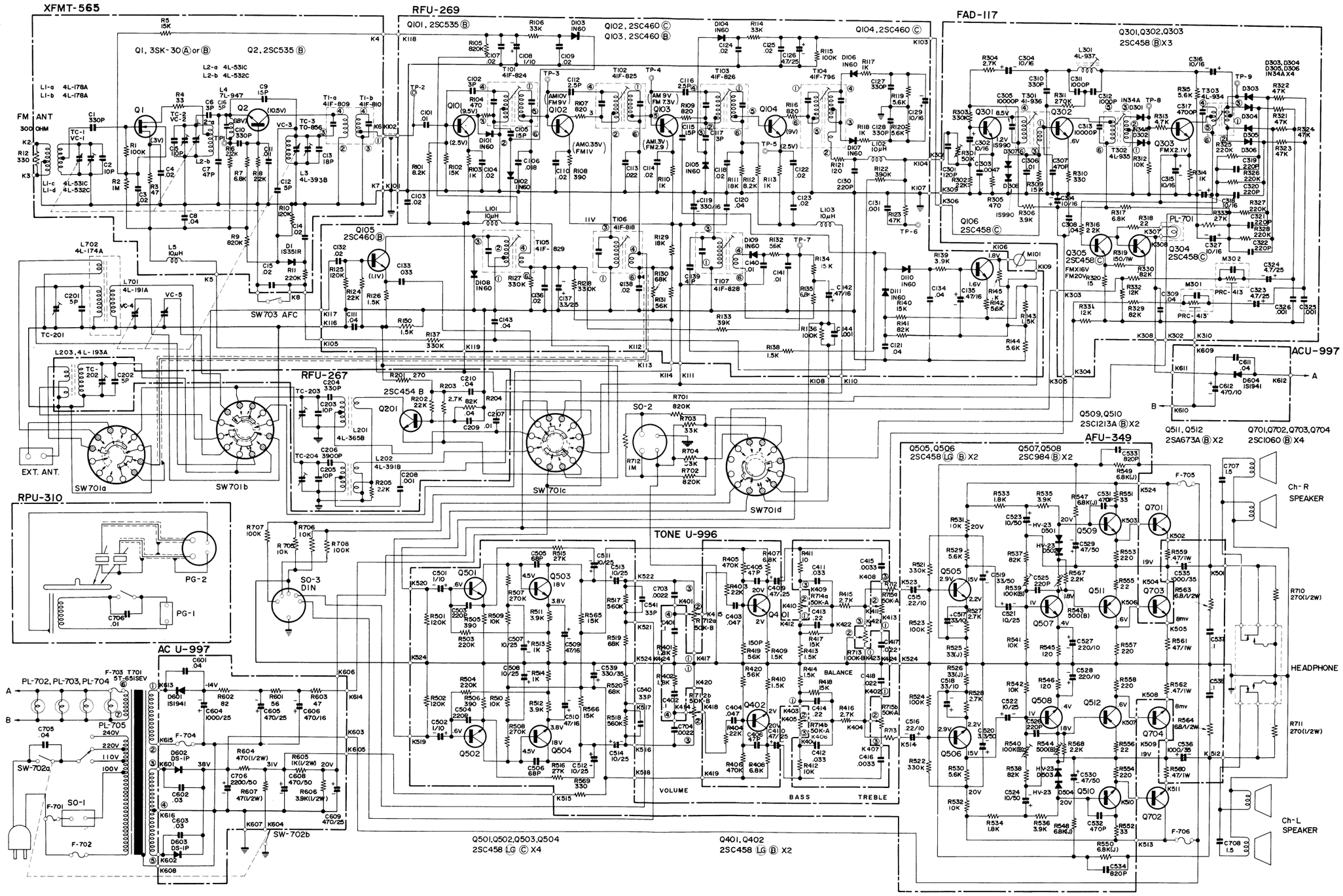


Figure 12 SCHEMATIC DIAGRAM

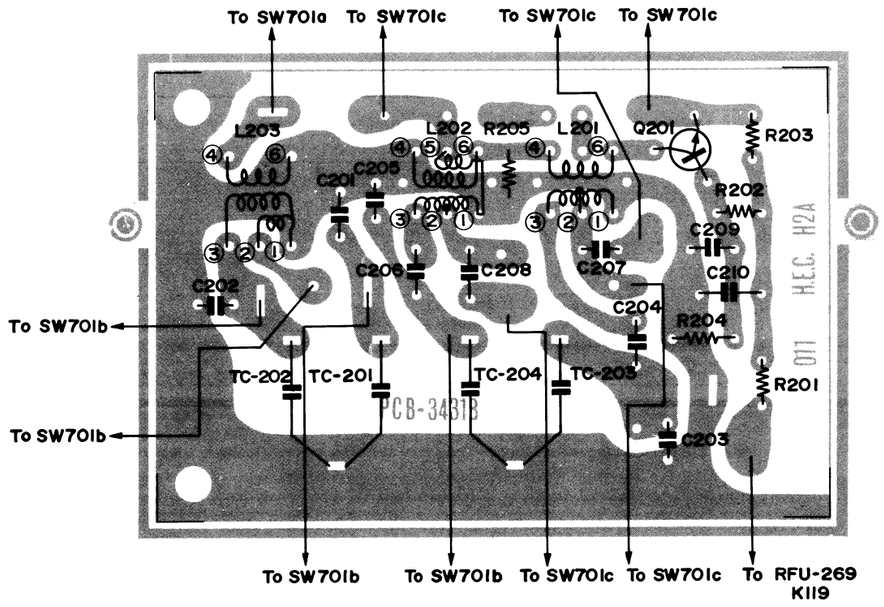


Figure 13 WIRING SIDE OF SW RF UNIT

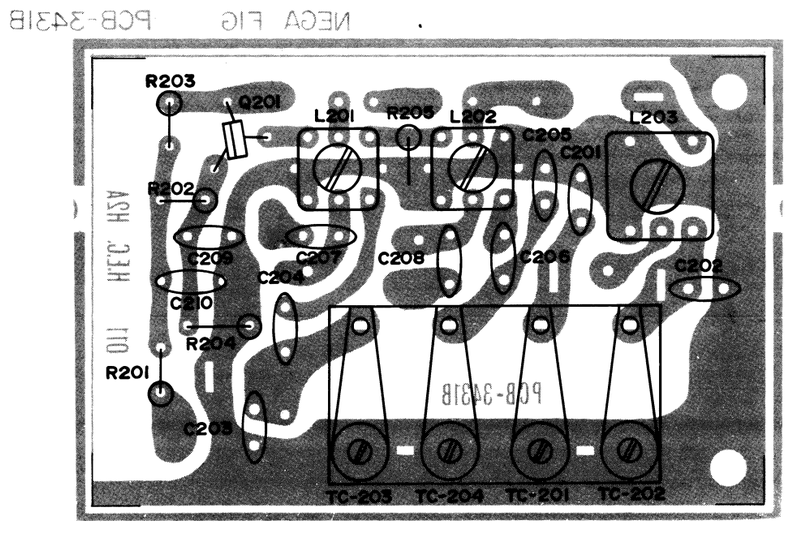


Figure 14 COMPONENT SIDE OF SW UNIT

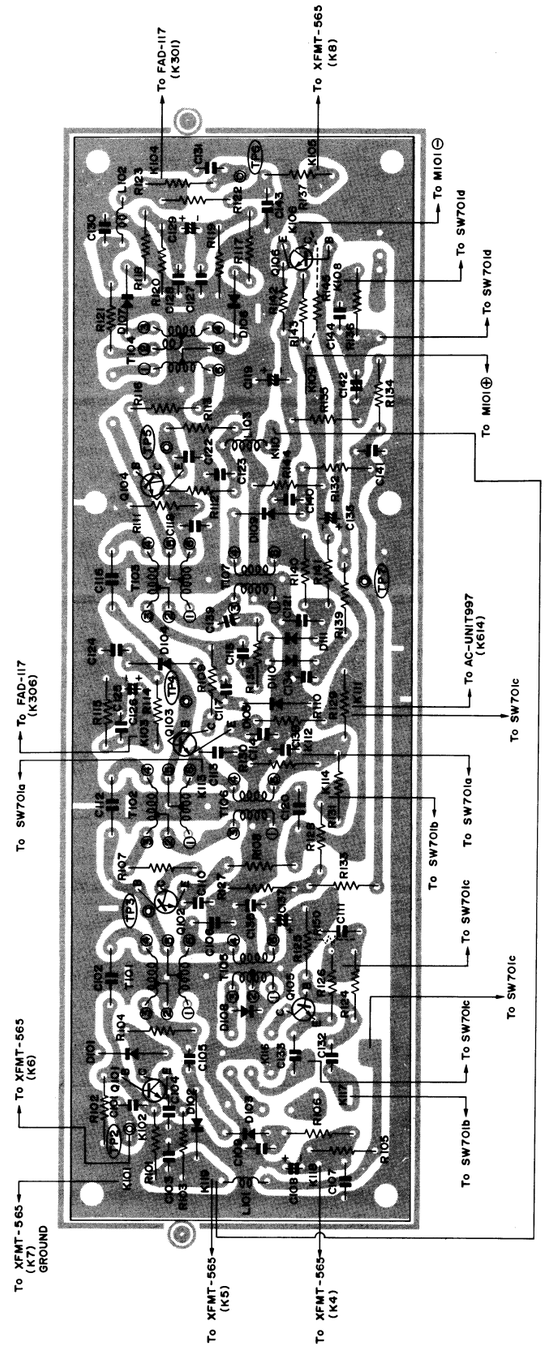


Figure 15 WIRING SIDE OF FM & AM RF UNIT

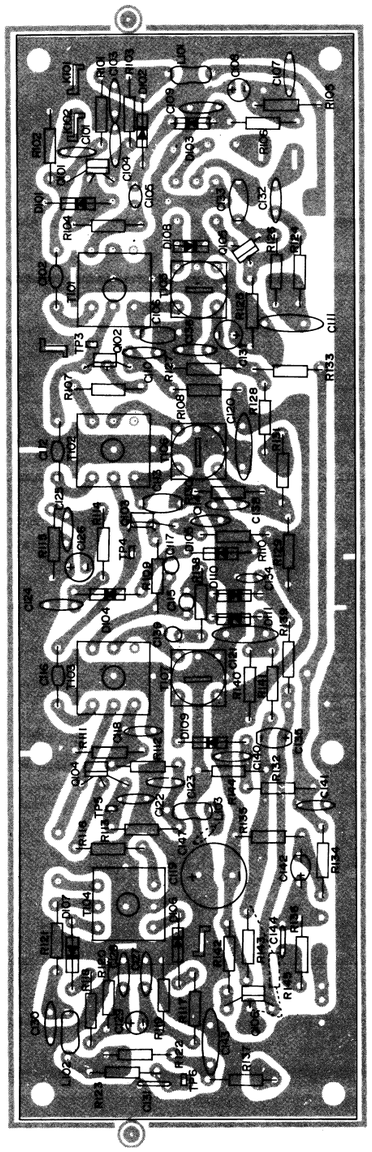


Figure 16 COMPONENT SIDE OF FM & AM RF UNIT

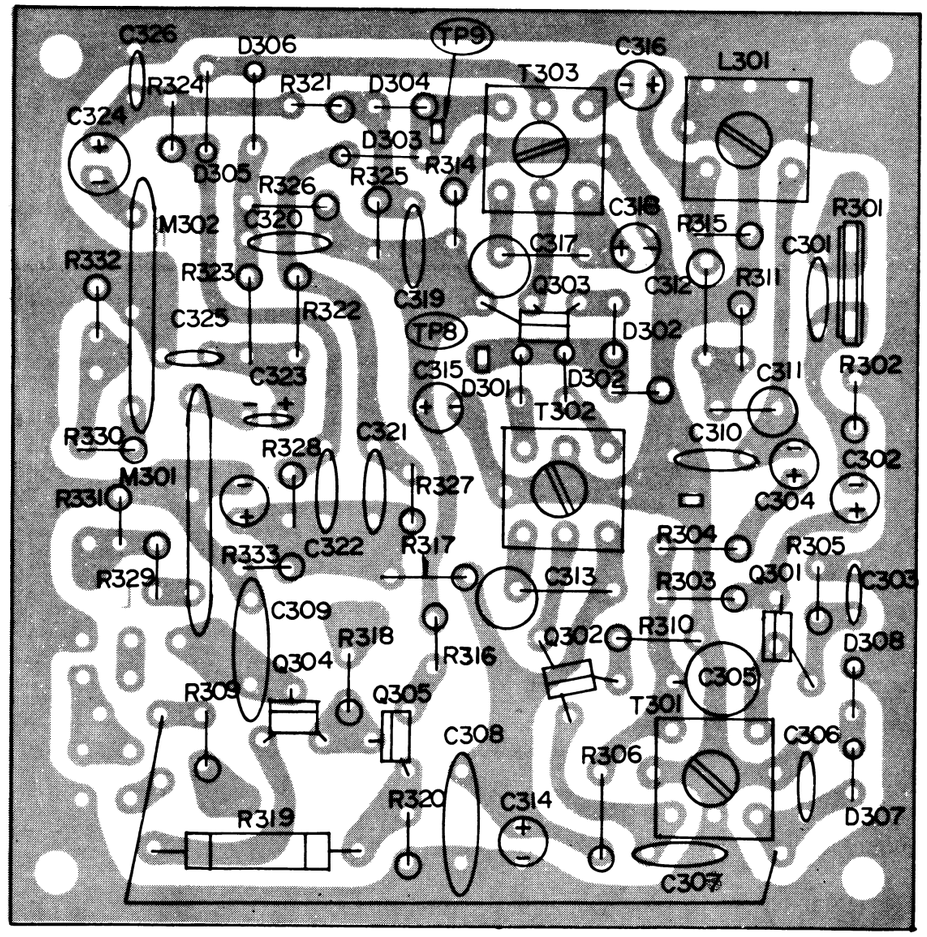


Figure 17 COMPONENT SIDE OF FM MPX UNIT

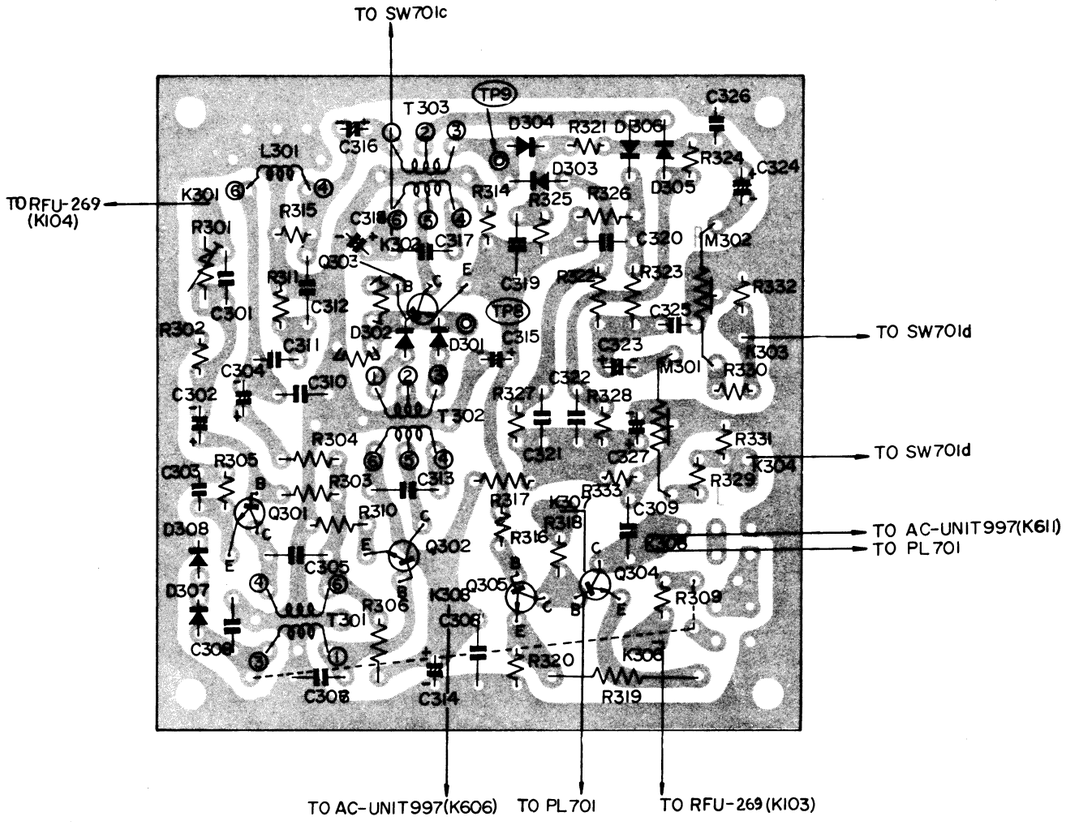


Figure 18 WIRING SIDE OF FM MPX UNIT

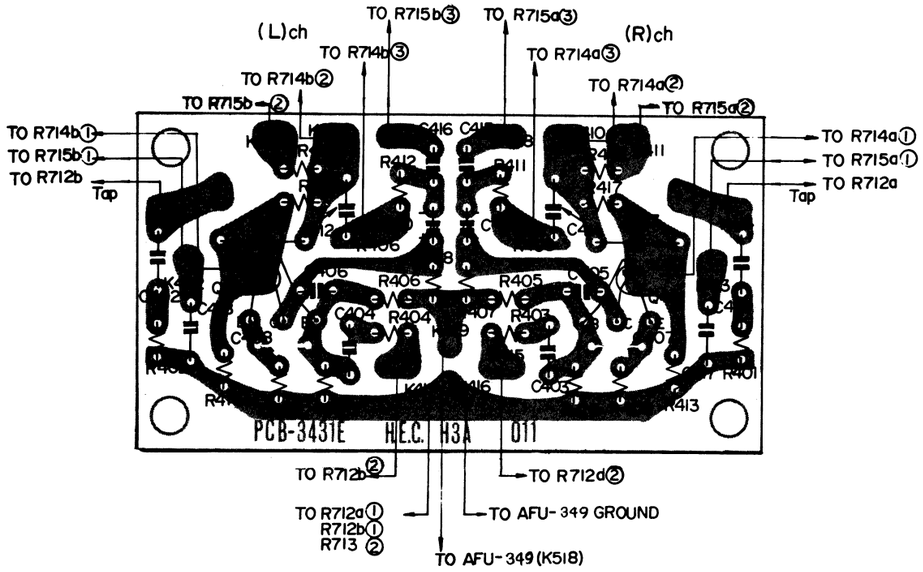


Figure 19 WIRING SIDE OF TONE UNIT

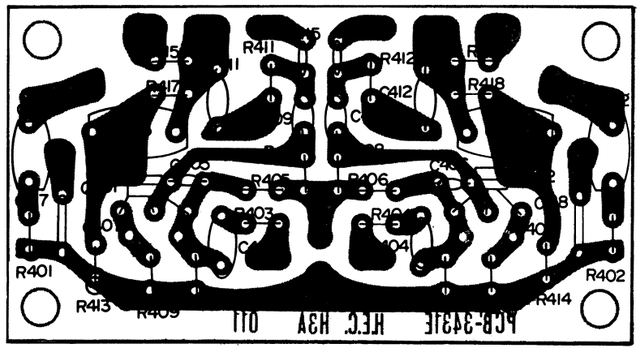


Figure 20 COMPONENT SIDE OF TONE UNIT

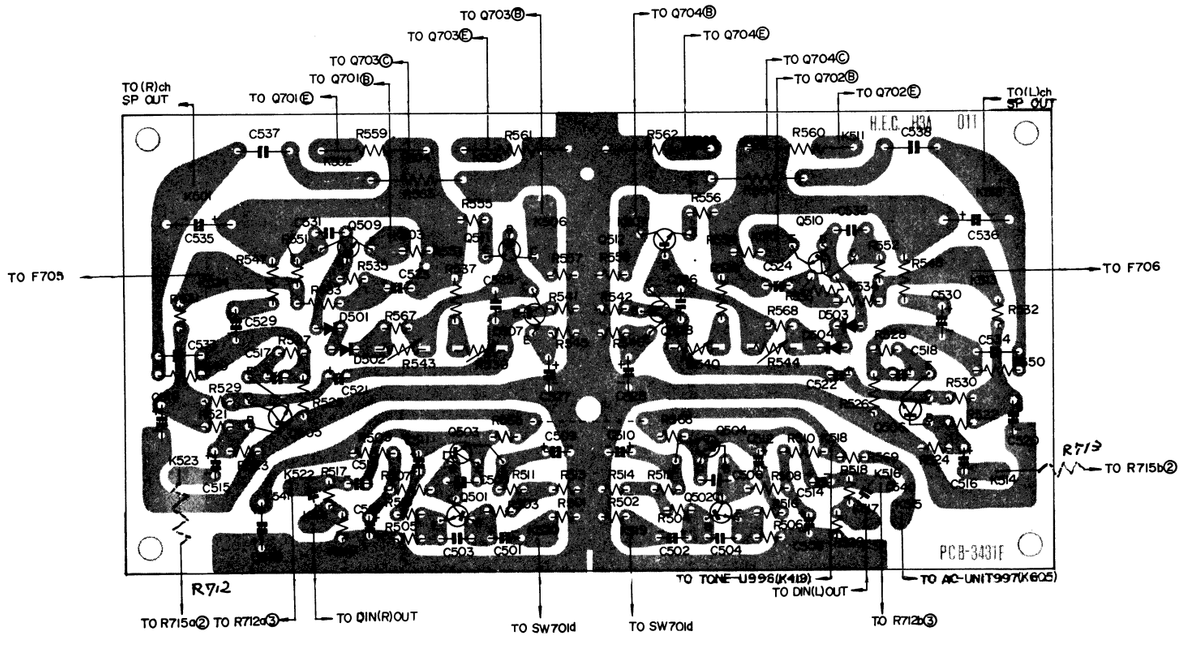


Figure 21 WIRING SIDE OF AUDIO UNIT

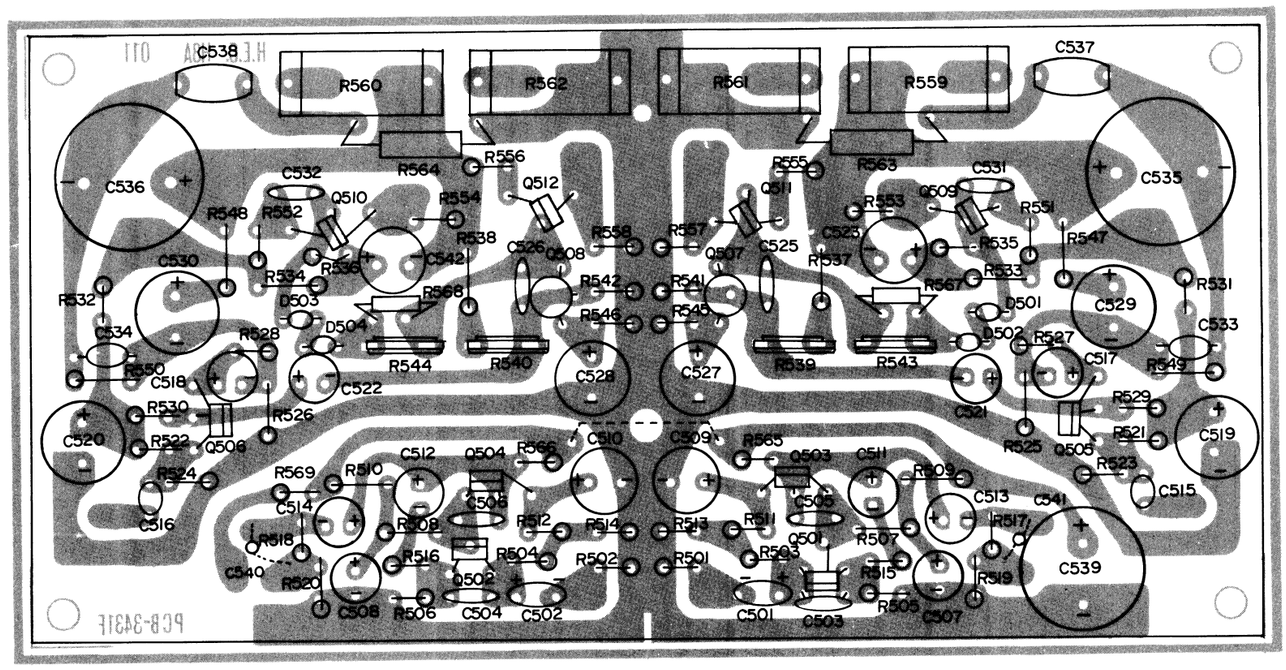


Figure 22 COMPONENT SIDE OF AUDIO UNIT

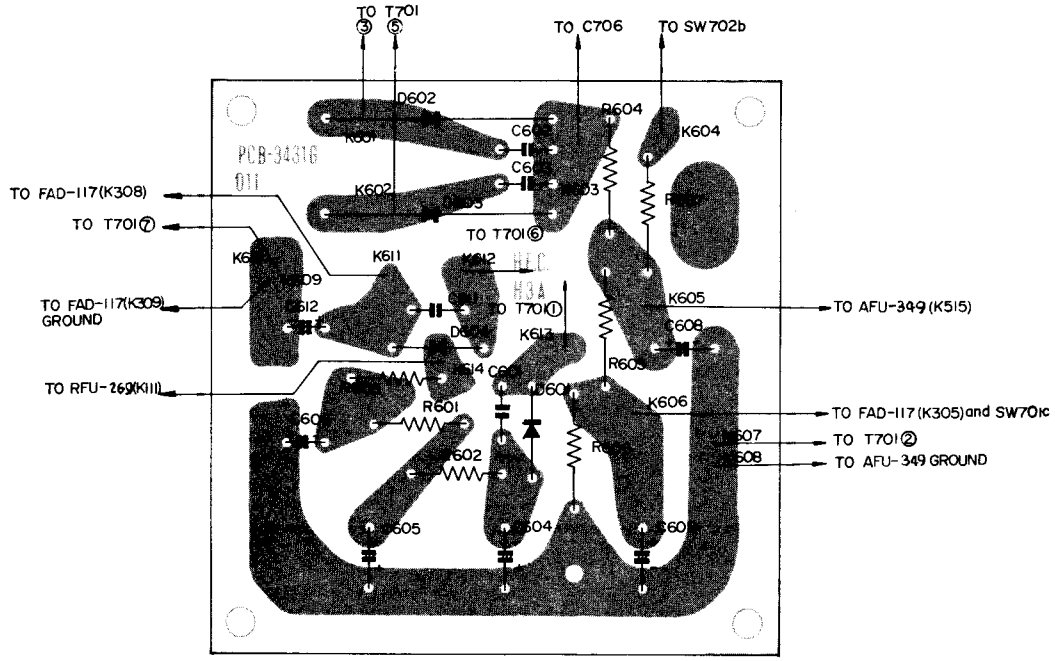


Figure 23 WIRING SIDE OF AC UNIT

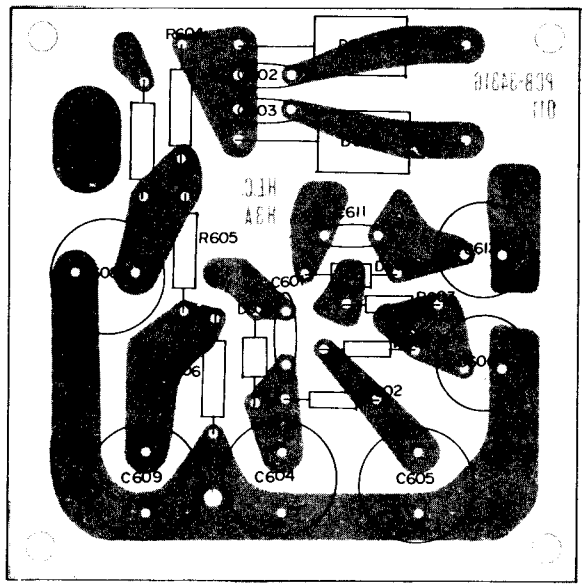
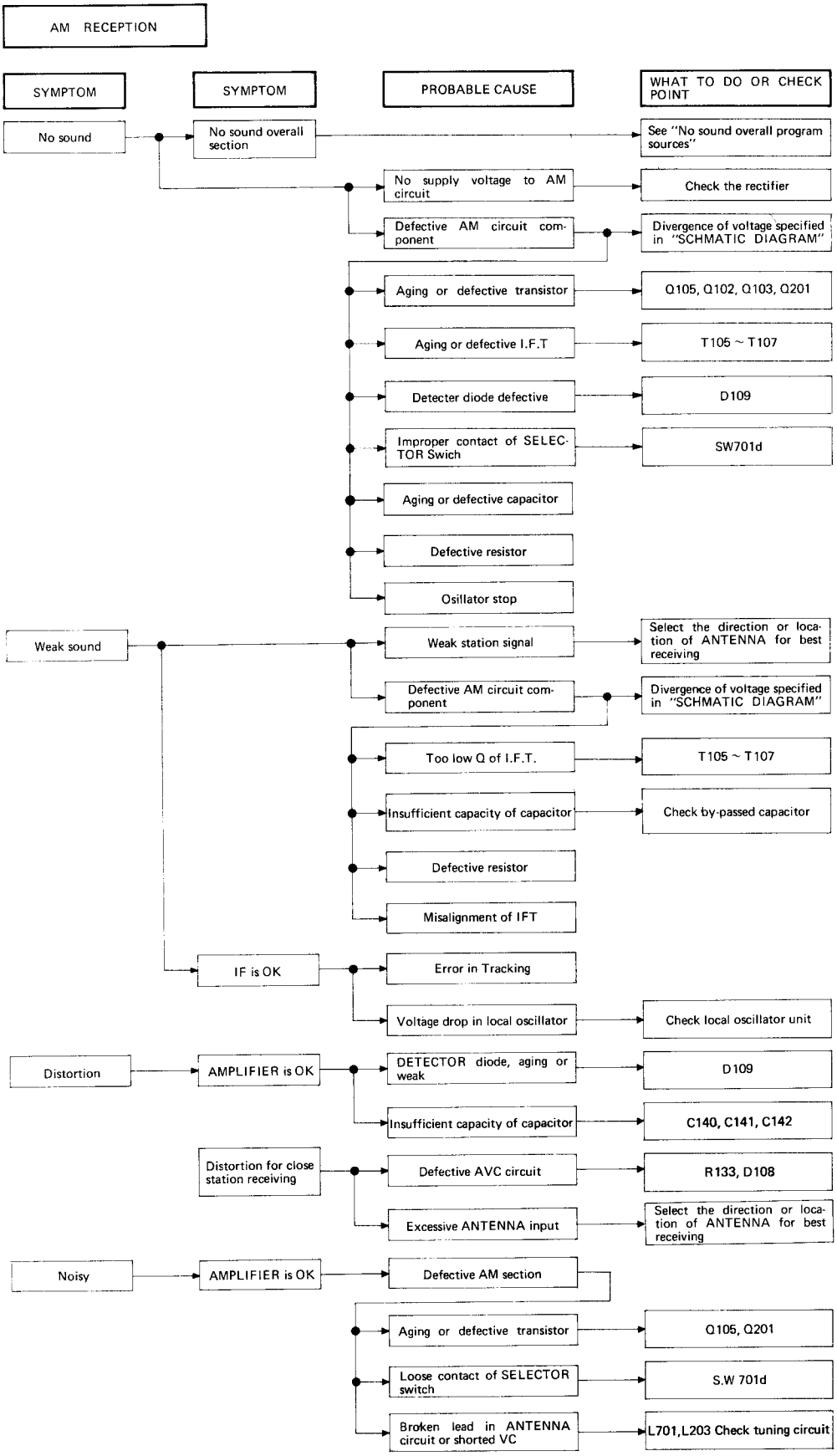


Figure 24 COMPONENT SIDE OF AC UNIT

TROUBLE SHOOTING GUIDE



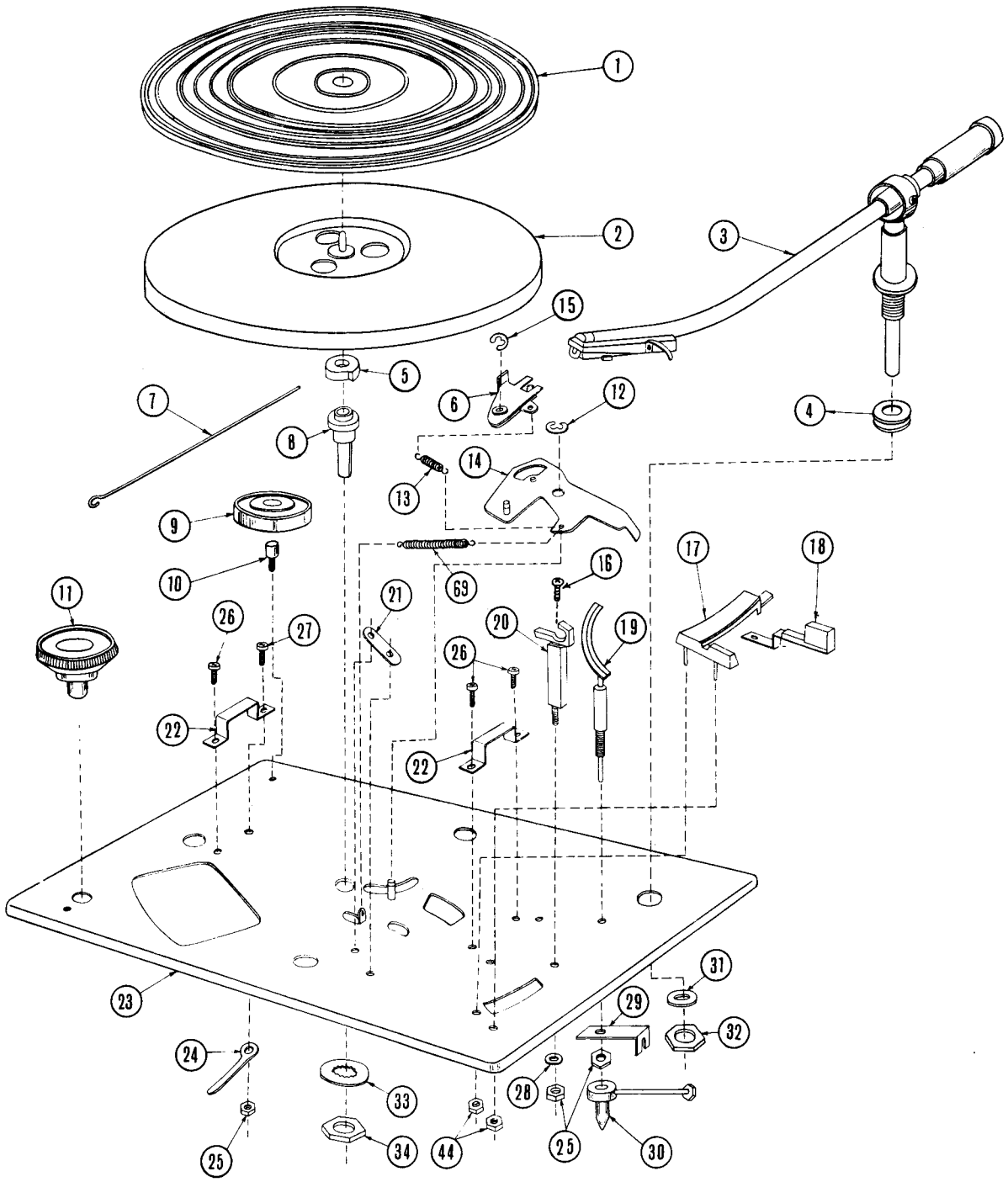


Figure 25 PLAYER MECHANISM EXPLODED TOP VIEW

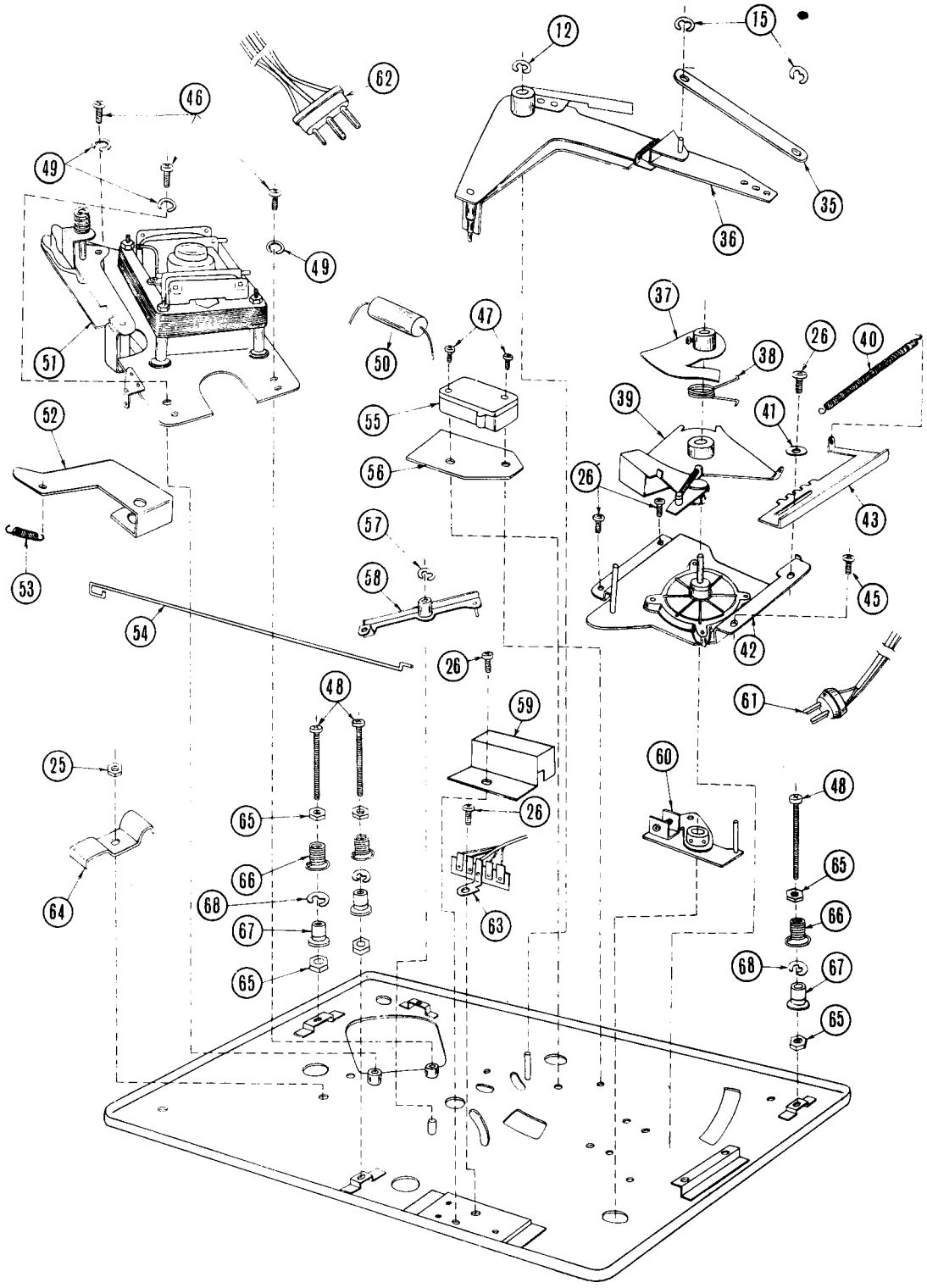


Figure 26 PLAYER MECHANISM EXPLODED BOTTOM VIEW

PARTS LIST

Miscellaneous

REF. NO.	PART NO.	DESCRIPTION
	X2CAB-431A	Cabinet, Center
	X2CAB9704B	Cabinet, Speaker
	8K-230	Knob, Tuning
	8K-338	Knob, Slide
	8K-231	Knob, Band Selector
	U-BUTA431B	Bottom Cover, Speaker Box
	U-BUTA9704A	Bottom Cover, Center Box
	ACRYL-431	Clear Board, Dial
	SISIN-431	Pointer, Dial
	DIAL-9704	Plate Dial Seal
	PANEL-9704	Operation Panel
	XSTAY-431B	Stay
	SP-HANGER	Hanger, Speaker
	FELT-333	Felt, Dust Cover
	X2MC-431	Main Chassis
	CHOBAN-431C	Hinge "C"
	XCHOBN-A187	Angle, Hige "C"
	FH-127	Holder, Fuse
	CH-68	Holder, Core
	XSO-A431A	Angle, Socket
	SO-A431C	Angle, Player AC Out Let.
	SO-A431D	Angle, Phono Output Socket
	X2SC-431	Sub-Chassis
	XP-ANG431A	Angle "A", Pulley
	P-ANG431B	Angle "B", Pulley
	ANT-ANG431	Angle, Antenna Core Holder
	XRALL-32	Rail, Dial
	HON-P-431	Plate, Heat Sink
	XPL-COV431	Cover, Dial light
	XDS-493	Shaft, Dial Drive Cord
	XDP-414	Drum, Dial
	P-513	Pulley, Dial
	P-SHAFT	Shaft, Pulley
	P-SHAFT	Shaft, Pulley
	VCA-147	Angle, Variable Tuning Gang
	VC-GOMU	Rubber, Variable Tuning Gang
	SPACER	Spacer, Variable Tuning Gang
	SPRING	Spring, Dial Cord Tension
	SNAP-BUSH	Stay, Power Source Cord
	SPACR-911B	Spacer, Headphone
	SPACR-179B	Spacer, Headphone
	GOMU-C431	Cushion, Meter
	ACC-325SEV	Cord, Power Source
	METER-765	Meter, Tuning
	ANT-WIRE37	Wire, FM Antenna
	SYANETU-P (C)	Paper, Heat Shutter, Transformer
	GOMU-SPACER	Cushion, Rubber, Protect Dial Warp
	MOLT-P-367	Molt, Interception of light
	SPR-221	Spring, Player Unit Retaining
	MOLT-P417	Molt, Interception of light AFC switch
	20H-398	Speaker, Woofer
	6T-15K	Speaker, Tweeter
	STTK-3205	Semiconductor Kid
	XFMT-565	FM Tuner Unit
	AFU-349	Main Amp Unit
	FAD-117	FM MPX Unit
	RFU-267	SW RF Unit
	RFU-269	RF Unit
	TONE-U996	Tone Unit
	AC-UNIT997	Power Supply Unit
	RPU-310	Player Unit

REF. NO.	PART NO.	DESCRIPTION
	PCB-3431A	Printed Circuit Board FM Tuner
	PCB-3431F	Printed Circuit Board, Audio Unit
	PCB-3431D	Printed Circuit Board, FM MPX Unit
	PCB-3431B	Printed Circuit Board, RF Unit
	PCB-3431C	Printed Circuit Board, RF Unit, FM
	PCB-3431E	Printed Circuit Board, Tone Unit
	PCB-3431G	Printed Circuit Board, Power Unit

Sockets, Switches, Fuses and Lamps

SO_1	SO-043	Socket, Player, AC Out Let
SO_2	SO-906	Socket, Phono
SO_3	SO-971	Socket, REC/PB
	SO-208	Socket, Pilot Lamp
	SO-035	Socket, Speaker
	SO-039	Socket, FM Antenna
	SO-041	Socket, AM Antenna
	SO-037	Socket, Three Selector, Power
	PG-447	Plug, Speaker
	PG-449	Plug, FM Antenna
	PG-439	Plug, Power Source
SW701	13S-121	Rotary Switch
SW702	XOS-89	Switch, Power
SW703	XOS-09	Switch, AFC
	J-955	Jack, Headphone
F701	FUSE-0.3S	Fuse, Player
F702A	FUSE-0.7S	Fuse, Power Source (110V)
F702B	FUSE-0.5S	Fuse, Power Source (220V/240V)
F703	FUSE-1.5S	Fuse, Pilot Lamp Protector
F704	FUSE-0.15S	Fuse, Power Source, Secondary
F705,F706	FUSE-1.0S	Fuse, Power Transistor Protector
	PL-541	Lamp, FM Stereo Indicator 6V, 50mA
	PL-567	Lamp, Dial Light 6.3V, 250mA

Coils and Transformers

L1-a,L1-b	4L-178A	Coil, FM Antenna
L1-c	4L-531C	Coil, FM Antenna
L1-d	4L-532C	Coil, FM Antenna
L2-a	4L-531C	Coil, RF
L2-b	4L-532C	Coil, RF
L3	4L-393B	Coil, FM Local Oscillator
L4	7L-947	Coil, Emitter Choke
L5	HL-100M	Coil, Choke
L101,L102, L103	HL-100M	Coil, Choke
L201	4L-365B	Coil, AM Local Oscillator
L202	4L-391B	Coil, SW Local Oscillator
L301	4L-937	Coil, 67kHz Signal Trap
L203	4L-193A	Coil, SW Antenna
L701	L-701	Coil, MW Antenna
L702	L-702	Coil, MW External Antenna
T1-a	4IF-809	Transformer, FM 1st IF
T1-b	4IF-810	Transformer, FM 1st IF
T101	4IF-824	Transformer, FM 2nd IF
T102	4IF-825	Transformer, FM 3rd IF
T103	4IF-826	Transformer, FM 4th IF
T104	4IF-796	Transformer, FM Detector
T105	4IF-829	Transformer, AM 1st IF
T106	4IF-818	Transformer, AM 2nd IF
T107	4IF-828	Transformer, AM Detector
T301	4L-936	Transformer, 19kHz Signal Amplifier

REF. NO.	PARTS NO.	DESCRIPTION
T302	4L-935	Transformer, 19kHz Signal Doubler
T303	4L-934	Transformer, 38kHz Signal Detector
T701	X5T-651SEV	Transformer, Power

Controls

R712a, R712b	X8V-686	Control, Volume 50K ohm
R714a, R714b, R715a, R715b	X8V-688	Control, Bass, Treble 50K ohm
R713	X8V-689	Control, Balance, 100K ohm
R539,R540	8V-647	Control, Bias Current Adj.100K ohm
R543,R544	8V-387	Control, Bias Current Adj. 500 ohm
R301	8V-723	Control, FM MPX Level Adj, 50K ohm

Variable Capacitors

VC1 ~ 5	XVC-183	Variable Tuning Gang
TC1 ~ 2	XVC-183	Trimmers, Part of Tuning Gang
TC3	TO-856	Trimmer
TC201 ~ 204	TO-853	Trimmers

Semiconductors

Q1	3SK-30Ⓐ	Transistor, FM RF Amplifier
Q1	3SK-30Ⓑ	Transistor, FM RF Amplifier
Q2	2SC535Ⓑ	Transistor, FM Mixer
Q101	2SC535Ⓑ	Transistor, FM 1st IF
Q102	2SC460Ⓒ	Transistor, FM 2nd IF
Q103	2SC460Ⓑ	Transistor, FM 3rd IF
Q104	2SC460Ⓒ	Transistor, FM 4th IF
Q105	2SC460Ⓑ	Transistor, AM Converter
Q106	2SC458Ⓒ	Transistor, Meter Indicator
Q201	2SC454Ⓑ	Transistor, AM Local Oscillator
Q301	2SC458Ⓑ	Transistor, FM MPX Composite Amplifier
Q302	2SC458Ⓑ	Transistor, FM MPX 19kHz Signal Amplifier
Q303	2SC458Ⓑ	Transistor, FM MPX 38kHz Signal Amplifier
Q304,Q305	2SC458Ⓒ	Transistor, FM MPX Indicator
Q401,Q402	2SC458ⓁⒼⒷ	Transistor, Tone Amplifier
Q501,Q502, Q503,Q504	2SC458ⓁⒼⒸ	Transistor, Pre-Amplifier
Q505,Q506	2SC458ⓁⒼⒷ	Transistor, Audio Amplifier
Q507,Q508	2SC984Ⓑ	Transistor, Driver
Q509,Q510	2SC1213AⒷ	Transistor, Driver, Matched Pairs
Q511,Q512	2SA673AⒷ	Transistor, Driver, Matched Pairs
Q701,Q702, Q703,Q704	2SC1060Ⓑ	Transistor, Power Amplifier
D1	1S-351R	Diode, AFC
D101	1N60	Diode, FM Limitter
D102,D103	1N60	Diode, FM AVC
D104	1N60	Diode, FM Rectifier
D105	1N60	Diode, FM Rectifier
D106,D107	1N60	Diode, FM Detector, Matched Pair
D108	1N60	Diode, AM AVC
D109	1N60	Diode, AM Detector
D110,D111	1N60	Diode, Tuning Meter
D301,D302	1N34A	Diode, FM MPX 19kHz Doubler
D303,D304	1N34A	Diode, FM MPX 38kHz Detector
D305,D306	1N34A	Diode, FM MPX 38kHz Detector
D307,D308	1S990	Diode, Voltage Stabilizer
D501,D502, D503,D504	HV-23 (BL)	Diode, Protecting Bias
D601,D604	1S 1941	Diode, Rectifier
D602,D603	SI-RECT-39	Diode, Rectifier

Resistors

R1	1/4M-100KK	100K ohm
R2	1/4M-1MK	1M ohm
R3	1/4M-47K	47 ohm
R4	1/4M-33K	33K ohm
R5	1/4M-15KK	15K ohm
R6	1/4M-1.5KK	1.5K ohm
R7	1/4M-6.8KK	6.8K ohm
R8	1/4M-22KK	22K ohm
R9	1/4M-820KK	820K ohm
R10	1/4M-120KK	120K ohm
R11	1/4M-220KK	220K ohm
R12	1/4M-330K	330 ohm
R101,R112	1/4M-8.2KK	8.2K ohm
R102,R140, R134	1/4M-15KK	15K ohm
R103,R110, R113,R117, R118,R145	1/4M-1KK	1K ohm
R104,	1/4M-470K	470 ohm
R105	1/4M-820KK	820K ohm
R106,R114	1/4M-33KK	33K ohm
R107,R109, R116	1/4M-820K	820 ohm
R108	1/4M-390K	390 ohm
R111,R129	1/4M-18KK	18K ohm
R115,R136	1/4M-100K	100K ohm
R119,R120, R142,R144	1/4M-5.6KK	5.6Koohm
R121	1/4M-120K	120 ohm
R122	1/4M-390KK	390K ohm
R123	1/4M-47KK	47K ohm
R124	1/4M-22KK	22K ohm
R125	1/4M-120KK	120K ohm
R126,R138, R143,R150	1/4M-1.5KK	1.5K ohm
R127,R128 R137	1/4M-330KK	330K ohm
R130	1/4M-68KK	68K ohm
R131	1/4M-56KK	56K ohm
R132	1/4M-5.6KK	5.6K ohm
R133	1/4M-39KK	39K ohm
R135	1/4M-6.8KK	6.8K ohm
R141	1/4M-82KK	82K ohm
R201	1/4M-270K	270 ohm
R202	1/4M-22KK	22K ohm
R203	1/4M-2.7KK	2.7K ohm
R204	1/4M-82KK	82K ohm
R205	1/4M-2.2KK	2.2K ohm
R302	1/4M-22KK	22K ohm
R303	1/4M-330KK	330K ohm
R304,R333	1/4M-2.7KK	2.7K ohm
R305	1/4M-470K	470 ohm
R306	1/4M-3.9KK	3.9K ohm
R309	1/4M-15KK	15K ohm
R310	1/4M-330K	330 ohm
R311	1/4M-270KK	270K ohm

REF. NO.	PART NO.	DESCRIPTION
R312	1/4M-10KK	10K ohm
R313	1/4M-4.7KK	4.7K ohm
R314	1/4M-1KK	1K ohm
R315	1/4M-5.6KK	5.6K ohm
R316	1/4M-2.2KK	2.2K ohm
R317	1/4M-6.8KK	6.8K ohm
R318	1/4M-22K	22 ohm
R319	1PO-150K	1W, 150 ohm, 10%, Oxide
R320	1/4M-15K	15 ohm
R321,R322 R323,R324	1/4M-51KK	51K ohm
R325,R326 R327,R328	1/4M-220KK	220K ohm
R329,R330	1/4M-82KK	82K ohm
R331,R332	1/4M-12KK	12K ohm
R401,R402	1/4SA-1.8KK	1.8K ohm
R403,R404	1/4SA-22KK	22K ohm
R405,R406	1/4SA-470KK	470K ohm
R407,R408	1/4SA-6.8KK	6.8K ohm
R409,R410 R413,R414	1/4SA-1.5KK	1.5K ohm
R411,R412	1/4SA-10KK	10K ohm
R415,R416	1/4SA-2.7KK	2.7K ohm
R417,R418	1/4SA-15KK	15K ohm
R419,R420	1/4SA-56KK	56K ohm
R501,R502	1/4SA-120KK	120K ohm
R503,R504	1/4SA-220KK	220K ohm
R505,R506	1/4SA-390K	390 ohm
R507,R508	1/4SA-270KK	270K ohm
R509,R510 R541,R542 R531,R532	1/4SA-10KK	10K ohm
R511,R512 R535,R536	1/4SA-3.9KK	3.9K ohm
R513,R514	1/4SA-1KK	1K ohm
R515,R516	1/4SA-27KK	27K ohm
R517,R518	1/4M-560KK	560K ohm
R519,R520	1/4M-68KK	68K ohm
R521,R522	1/4M-330KK	330K ohm
R523,R524	1/4M-100KK	100K ohm
R525,R526	1/4M-33J	33 ohm 5% Carbon
R527,R528	1/4M-2.7KK	2.7K ohm
R529,R530	1/4M-5.6KK	5.6K ohm
R533,R534	1/4M-1.8KK	1.8K ohm
R537,R538	1/4M-82KK	82K ohm
R545,R546	1/4M-120K	120 ohm
R547,R548 R549,R550	1/4M-6.8KJ	6.8K ohm, 5% Carbon
R551,R552	1/4M-33K	33 ohm
R553,R554 R557,R558	1/4M-220K	220 ohm
R555,R556	1/4M-22K	22 ohm
R559,R560 R561,R562	1LL-0.47K	1W, 0.47 ohm, 10%, Resin
R563,R564	1/2M-6.8K	6.8 ohm
R565,R566	1/4SA-15KK	15K ohm
R567,R568	1/4M-2.2KK	2.2K ohm
R569	1/4M-330K	330 ohm
R601,	1/4M-56K	56 ohm
R602	1/4M-82K	82 ohm
R603	1/4M-47K	47 ohm
R604	1/2M-470K	470 ohm
R605	1/2M-1KK	1K ohm
R606	1/2M-3.9KK	3.9K ohm
R607	1/2M-47K	47 ohm
R701,R702	1/4M-820KJ	820K ohm 5% Carbon
R707,R708	1/4M-100KK	100K ohm

REF. NO.	PART NO.	DESCRIPTION
R703,R704	1/4M-33KJ	33K ohm ±5% Carbon
R705,R706	1/4M-10KK	10K ohm
R709	1/4M-18KK	18K ohm
R710,R711	1/2M-270K	270 ohm
M301,M302	PRC-413	Capristor
R712,R713	1/4M-27KK	27K ohm

Capacitors

C1,C10	D-5-337K	330PF, 50V, ±10% Discap
C2,C5	D-5-108F	10PF, 50V, ±1PF Discap
C3,C4 C14,C15	D-5-205Z	0.02MF, 50V +80% −20% Discap
C6	D-5-309C	3PF, 50V, ±0.25PF Discap
C7,C405 C406	D-5-478K	47PF, 50V, ±10% Discap
C8	D-5-405Z	0.04MF, 50V, +80% −20% Discap
C9	D-5-209C	2PF, 50V, ±0.25PF Discap
C11	D-5-105P	0.01MF, 50V, +100% −0% Discap
C12	D-5-509C	5PF, 50V, ±0.25PF Discap
C13	D-5-188J	18PF, 50V, ±5% Discap
C101,C140 C141	D-5-105P	0.01MF, 50V +100% −0% Discap
C102,C117	D-5-309C	3PF, 50V, ±0.25PF Discap
C103,C104 C107,C109 C110,C114 C118,C122 C123,C124 C125,C132 C136,C138	D-5-205Z	0.02MF, 50V, +80% −20% Discap
C105	D-5-158K	15PF, 50V, ±10% Discap
C106	ML-5-185K	0.018MF, 50V, ±10% Mylar
C108	AD-1-103N	1MF, 10V, +40% −20% Aluminum Electrolytic
C111,C120 C134,C143	D-5-405Z	0.04MF, 50V +80% −20% Discap
C112,C116	D-5-259C	2.5PF, 50V , ±0.25PF, Discap
C113	ML-5-225K	0.022MF, 50V, ±10% Mylar
C115	D-5-159C	1.5PF, 50V, ±0.25PF Discap
C119	CU1.6-331Q	330MF, 16V, +100% −0% Electrolytic
C126	CU2.5-473R	4.7MF, 25V, +150% −10% Electrolytic
C127,C128	D-5-337K	330PF, 50V, ±10% Discap
C129	CU1.6-102Q	10MF, 16V, +100% −10% Electrolytic
C130	D-5-227K	220PF, 50V, ±10% Discap
C131	ML-5-106K	0.001MF, 50V, ±10% Mylar
C133	ML-5-335K	0.033MF, 50V,±10% Mylar
C135,C142	AD1.6-474M	0.47MF,16V, ±20% Aluminum Electrolytic
C137	CU-2.5-333R	3.3MF, 25V +150% −10% Electrolytic
C139	D-5-409C	4PF, 50V, ±0.25PF, Discap
C201,C202	D-5-509C	5PF, 50V, ±0.25PF, Discap
C203,C205	D-5-108F	10PF, 50V ±1PF Discap
C204	D-5-337J	330PF, 50V, ±5% Discap
C206,	S-2.5-396J	3900PF, 25V, ±5% Styrene
C207	ML-5-105K	0.01MF, 50V, ±10% Mylar
C208,C144	ML-5-106K	0.001MF, 50V, ±10% Mylar
C209,C210	D-5-405Z	0.04MF, 50V, +80% −20% Discap
C301	D-5-127K	120PF, 50V, ±10% Discap
C302,C304 C314,C315 C316,C318 C327	CU1.6-102Q	10MF, 16V, +100%, −10% Electrolytic
C303	ML-5-476K	0.047MF, 50V, ±10% Mylar
C305,C313	S-5-105J	1000PF, 50V, ±5% Styrene

REF. NO.	PART NO.	DESCRIPTION
C306	ML-5-105M	0.01MF, 50V, ±20% Mylar
C531,C307, C532	D-5-477K	470PF, 50V, ±10% Discap
C308,C309	D-5-405Z	0.04MF, 50V, +80% −20% Discap
C310	D-5-337K	330PF, 50V, ±10% Discap
C311,C312	S-5-106J	1000PF, 50V, ±5% styrene
C317	S-5-476J	4700PF, 50V, ±5% Styrene
C319,C320 C321,C322	D-5-227K	220PF, 50V, ±10% Discap
C323,C324	CU2.5-473R	4.7MF, 25V, +150% −10% Electrolytic
C325,C326	ML-5-106K	0.001MF, 50V, ±10% Mylar
C401,C402	ML-5-104K	0.1MF, 50V, ±10% Mylar
C403,C404	ML-5-475K	0.047MF, 50V, ±10% Mylar
C409,C410	AD2.5-474M	0.47MF, 25V ±20% Aluminum Electrolytic
C411,C412	ML-5-335K	0.033MF, 50V, ±10% Mylar
C413,C414	ML-5-224K	0.22MF, 50V, ±10% Mylar
C415,C416	ML-5-336K	0.0033MF, 50V, ±10% Mylar
C417,C418	ML-5-225K	0.022MF, 50V, ±10% Mylar
C501,C502	AD-1-103M	1MF, 10V, ±20% Aluminum Electrolytic
C503,C504 C525,C526	D-5-227K	220PF, 50V, ±10% Discap
C505,C506	D-5-688K	68PF, 50V, ±10% Discap
C507,C508 C511,C512 C513,C514 C521,C522	CU2.5-102Q	10MF, 25V, +100% −10% Electrolytic
C509,C510	CU1.6-472Q	47MF, 16V, +100% −10% Electrolytic
C515,C516	AD-1-224M	0.22MF, 10V, ±20% Aluminum Electrolytic
C517,C518	CU-1-332Q	33MF, 10V, +100% −10% Electrolytic
C519,C520	CU-5-332Q	33MF, 50V, +100% −10% Electrolytic
C523,C524	CU-5-102Q	10MF, 50V, +100% −10% Electrolytic
C527,C528	CU-1-221Q	220MF, 10V, +100% −10% Electrolytic
C529,C530	CU-5-472Q	47MF, 50V, +100% −10% Electrolytic
C533,C534	D-5-827K	820PF, 50V, ±10% Discap
C535,C536	CU3.5-100Q	1000MF, 35V, +100% −10% Electrolytic
C537,C538	ML-5-104K	0.1MF, 50V, ±10% Mylar
C539	CU3.5-331Q	330MF, 35V, +100% −10% Electrolytic
C540,C541	D-5-338K	33PF, 50V, ±10% Discap
C601,C611	D-5-405Z	0.04MF, 50V, +80% −20% Discap
C602,C603	D-7.5-305P	0.03MF, 75V, +100% −0% Discap
C604	CU2.5-100Q	1000MF, 25V, +100% −10% Electrolytic
C605,C609	CU2.5-471Q	470MF, 25V, +100% −10% Electrolytic
C606	CU1.6-471Q	470MF, 16V, +100% −10% Electrolytic
C608	CU-5-471Q	470MF, 50V, +100% −10% Electrolytic
C703,C704	ML-5-226K	0.0022MF, 50V, ±10% Mylar
C705	OL-1K-405K	0.04MF, 10KV, ±10% Oil
C706	5L-220QB	2200MF, 50V, +100% −10% Electrolytic
C707,C708	NP-3-153M	1.5MF, 30V, ±20% Non-Polary Electrolytic

REF. NO.	PART NO.	DESCRIPTION

RP Unit Miscellaneous

1	TT-SHEET30	Sheet, Turn Table
2	TURN-TABLE	Turn Table
3	PU-302	Pick Up Arm
4	PU-CUSHION	Cushion, Pick Up
5	XPINION	Pinion Assembly
6	TRIP-PLATE	Plate, Trip
7	SHIFT-ROD	Shift Rod
8	TT. METAL	Turn Table Shaft Receptacle.
9	EP-ADAPTOR	EP-Adaptor
10	XADAPT-PIN	Adaptor Pin
11	8K-372	Knob, Speed Selector
12	E-STOPRING (3E)	E-Stopring
13	TRIP-SPG	Spring, Trip Assembly
14	TRIP-LEVER	Lever, Trip
15	E-STOPRING (2E)	E-stopring
16	X3M+8S	Screw 3x10
17	RP-COVER	Cover, Function Lever
18	FUNC-KNOB	Knob, Function
19	RAIL-1	RAIL
20	PU-REST302	Pick Up Arm Rest
21	XSW-PLATE	Plate, Switch
22	HANDLE	Handle
23	XRP-MC-300	Player Board
24	WH-1	Wire Holder
25	X3ND	Nut
26	X3M+6S	Screw, 3x6S
27	X3M+10S	Screw, 3x10
28	3.2W16-1.0	Washer
29	S-GUIDE	Guide
30	XS-NUT1	Nut
31		Washer
32		Nut
33		Washer
34		Nut
35	CON-ROD	Connecting Rod
36	XFC-LEVER	Function Lever
37	CAM-ASSY	Cam Assembly
38	BRAKE-SPG	Spring, Brake
39	CAM-DRIVER	Cam Driver
40	RET-SPG	Spring, Cam Driver
41	3.2W8-0.5S	Washer
42	XDAMP-300	Sub-Chassis
43	SP-HOLDER	Spring Holder
44	2.6N	Nut
45	X3S+6S	Screw 3x6
46	X4M+8S	Screw 4x8
47	X3M+18S	Screw 3x18
48	X5M+70S	Screw 5x70
49	4SW	Spring Washer
50	OL-60-475K	Condenser, 0.47MF, 600V, 10%, Oil
51	XMOTOR-310	Motor
52	ID-SHIFT	Idler Shift
53	ID-SPG	Spring, Idler Shift
54	S-WIRE	Sensing Wire
55	9S-75	Micro Switch
56	SW-BASE	Base, Micro Switch
57	E-STOPRING	E-Stopring
58	E-LEVER	Engage Lever Assembly
59	SHIELD-P	Shield Cover Assembly
60	XA-BRACKET	Arm Bracket Assembly

REF. NO.	PART NO.	DESCRIPTION
61	PG-170	Plug 4 Pin
62	PG-405	Plug 3 Pin
63	LG-407	Lug
64	WIRE-P3	Wire Holder
65	X5N	Nut
66	BOARD-SPG	Board Spring
67	XSP-NUT	Metal
68	E-STOPRING (6E)	E-Stopring
	ACC-327	AC Cord
	I-08	Idler
	P-29	Capstan, Motor
	C-518D	Cartridge
	N-14D	Stylus